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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,124	01/30/2002	Gregory J. Wells	01-40 US	3336

23693 7590 08/29/2003

Varian Inc.
Legal Department
3120 Hansen Way D-102
Palo Alto, CA 94304

EXAMINER	
JOHNSTON, PHILLIP A	
ART UNIT	PAPER NUMBER
2881	

DATE MAILED: 08/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/066,124	WELLS ET AL.	
	Examiner	Art Unit	
	Phillip A Johnston	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Detailed Action

1. In response to applicant's amendment dated 6-27-2003, the 35 U.S.C. 112 rejection in the previous Office Action is hereby withdrawn,

Claims Rejection – 35 U.S.C. 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,259,091 to Elden, in view of Li, U.S. Patent No. 6,570,153.

Elden (091) discloses an inductively coupled plasma mass spectrometers (hereafter called ICP/MS), wherein a plasma consisting of a carrier gas (typically argon) and a sample is generated in an inductively coupled plasma (ICP) and a mass spectrometer is employed to separate and distinguish constituent atoms and isotopes. For both convenience of operation and to maintain a desirable temperature in the plasma, the ICP is typically operated at atmospheric pressure. In order to transfer ions

from the plasma to a mass spectrometer, the plasma is directed through two apertures 20, 30 and then through a lens stack 60. The plasma is thereby converted into an ion beam containing analyte ions and carrier gas ions and/or matrix ions. A lens stack 60 typically consists of a series of lens elements 70, 80, typically plates and/or cylindrical tubes which have potentials applied to them and which have apertures through which the ion beam is directed. The ion beam is directed through these lens elements 70, 80 which focus the ion beam into a narrow stream which is directed to a mass analyzer 10, or a linear quadrupole 200 (FIG. 3). As used herein, mass analyzer or ion discriminating unit refers to any apparatus, which separates charged species according to their m/z and/or kinetic energy. Ion discriminating units include but are not limited to a linear quadrupole, a quadrupole ion trap, a time-of-flight tube, a combination of a quadrupole ion trap and a time-of-flight tube, a magnetic sector, an electric sector, a combination of a magnetic sector and an electric sector, a lens stack, a DC voltage plate, an ion cyclotron resonance cell, and an rf multipole ion guide. Modified ICP/MS systems have been built which use a three-dimensional RF quadrupole ion trap, either alone or in combination with a linear RF quadrupole as an ion discriminating unit. Upon exiting the lens stack, the ion beam is directed into the ion discriminating unit. Ions are selectively emitted from the ion discriminating unit according to their mass to charge ratio (m/z) and/or kinetic energy. These selectively emitted ions are then directed to a charged particle detector 50. In this manner, the ICP/MS is able to determine the presence of selected ions in an analyte according to

their (m/z) and/or kinetic energy. It is critical to maintain the ion discriminating unit in a vacuum because collisions or reactions between the ions and any gases present in the ion discriminating unit will tend to deflect ions away from the charged particle detector or neutralize the ions of analyte. It is critical to maintain the charged particle detector in a vacuum because the high potential across the detector will cause an electrical discharge in any gas present in sufficient pressure, typically above 10^{-4} Torr. One or more pumps are thus typically utilized to evacuate a series of chambers in between the ICP and the charged particle detector. The chambers are separated by one or more apertures, to achieve the transition from atmospheric pressure at the ICP to high vacuum at the charged particle detector. See Column 8, line 27-67; and Column 9, line 1-11.

Elden (091) also discloses that , the term "aperture" is used as understood in this art to be a solid element with a through hole, that can be a plate, cylinder or other geometric shape. The solid element (e.g. plate and/or cylinder) is the physical element defining the hole through which ions or gas pass. See Column 4, line 55-59.

Elden (091) as applied above does not disclose the use of a gating/deflector lens comprising first and second members forming a generally cylindrical configuration, as recited in Claims 1,5, and 9. However, Li (153) discloses an ion gate that is present between the ion source and the first end of the quadrupole. The ion gate functions, at predetermined times, to prevent ions, usually newly generated ions, from entering the quadrupole mass analyzer or exiting the ion source. Generally, the optical axis of the

ion gate is substantially coaxial with the optical axis of the quadrupole mass analyzer. An ion gate can be constructed using a planar electrode with an aperture in its center and arranged perpendicular to the optical axis of the quadrupole mass analyzer. This aperture may further be covered with high transparent metal grid material. If the potential applied to the ion gate is higher than the kinetic energy of the ion beam, no ion can enter the quadrupole mass analyzer and vice versa. Another embodiment of the ion gate is constructed using a pair of deflection plates arranged parallel to the optical axis. Applying a potential difference to the deflection plates generates a potential field perpendicular to the ion travel and hence removes ion beam from the optical axis. See Column 5, line 61-67; and Column 6, line 1-11.

Li (153) also discloses in FIG. 1, an apparatus 10 comprising single quadrupole mass analyzer 24, ion source 12, ion gate 14 with aperture 14a and beam limiting plate 16 with aperture 16a. Disposed between ion gate 14 and plate 16 is ion deflector 18 comprising ion deflection plates 20 and 22. Mass analyzer 24 has opposing ends 24a and 24b. Plate 16 lies adjacent end 24a. Adjacent to end 24b of mass analyzer 24 is a pair of electrodes 26 and 28. Electrode 26 has a vacuum conducting aperture 26a and electrode 28 has aperture 28a. Ion collision/ion storage cell 30 lies between electrodes 26 and 28. A first ion detector 32 is adjacent electrode 28 and a second ion detector 34 is adjacent ion gate 14. All of the above components are aligned with the optical axis of quadrupole mass analyzer 24 with the exception of second ion detector 34, which is offset from the optical axis. The offset of ion detector 34 permits detection of ions deflected by ion deflector 18. See Column 7, line 45-61.

Therefore it would have been obvious to one of ordinary skill in the art that Eldens' (091) ion gating lens can be modified to utilize two separate electrodes in accordance with Li (153), to provide ion deflection capability, thereby increasing gating and mass selectivity .

Conclusion

4. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (703) 305-7022. The examiner can normally be reached on Monday-Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiners supervisor John Lee can be reached at (703) 308-4116. The fax phone numbers are (703) 872-9318 for regular response activity, and (703) 872-9319 for after-final responses. In addition the customer service fax number is (703) 872- 9317.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

PJ

August 19, 2003

BRUCE ANDERSON
PRIMARY EXAMINER